CPS3000PIE

USER MANUAL

K01-0000010-00

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SAFETY AND EMC INSTRUCTIONS

(SAVE THESE INSTRUCTIONS)

This manual contains important safety instructions. Please read and follow all instructions carefully during installation and operation of the unit. Read this manual thoroughly before attempting to unpack, install, or operate your Emergency Power System (EPS).

CAUTION! To prevent the risk of fire or electric shock, install in a temperature and humidity controlled indoor area free of conductive contaminants. (Please see specifications for acceptable temperature and humidity range).

CAUTION! To reduce the risk of electric shock, do not remove the cover.

CAUTION! EPS must be connected to an AC power outlet with circuit breaker protection. Do not plug into an outlet that is not grounded. If you need to de-energize this equipment, turn off and unplug the unit.

CAUTION! To avoid electrical shock, turn off the unit and unplug it from the AC power source before servicing EPS, replacing the external battery or installing equipment.

CAUTION! To reduce the risk of fire, only connect the EPS to a circuit with 25 amperes maximum branch circuit over-current protection in accordance with the CE requirement.

CAUTION! The building wiring socket outlet (shockproof socket outlet) must be easily accessible and close to the EPS.

CAUTION! Please use only VDE-tested, CE-marked mains cable (e.g. the mains cable of your equipment) to connect the EPS to the building wiring socket outlet (shockproof socket outlet).

CAUTION! Please use only VDE-tested, CE-marked power cables to connect the loads to the EPS.

CAUTION! When installing the equipment, ensure that the sum of the leakage current of the EPS and the connected equipment does not exceed 3.5mA.

CAUTION! This is permanently connected equipment and only qualified maintenance personnel may carry out installations.

CAUTION! Do not disconnect the mains cable on the EPS or the building wiring socket outlet (shockproof socket outlet) during operations since this would remove the protective ground of the EPS and of all connected loads.

DO NOT USE FOR MEDICAL OR LIFE SUPPORT EQUIPMENT!
DO NOT use in any circumstance that would affect operation or safety of any life support equipment or with any medical applications or patient care.

DO NOT USE WITH OR NEAR AQUARIUMS! To reduce the risk of fire or electric shock, do not use with or near an aquarium. Condensation from the aquarium can cause the unit to short out.

DO NOT USE WITH LASER PRINTERS! The power demands of these devices will overload and possibly damage the unit.

DO NOT INSTALL THE EPS WHERE IT WOULD BE EXPOSED TO DIRECT SUNLIGHT OR NEAR HEAT!

DO NOT BLOCK OFF VENTILATION OPENINGS IN THE EPS'S HOUSING!

DO NOT CONNECT DOMESTIC APPLIANCES SUCH AS HAIR DRYERS TO EPS OUTPUT SOCKETS.

SAFETY:

EN62040-1-1

EMI:

Conducted Emission: IEC/EN 62040-2…Category C2

Radiated Emission: IEC/EN 62040-2……Category C2

Harmonic Current: IEC/EN61000-3-2

Voltage Fluctuations and Flicker: IEC/EN61000-3-3

EMS:

IEC/EN61000-4-2(ESD)

IEC/EN61000-4-3(RS)

IEC/EN61000-4-4(EFT)

IEC/EN61000-4-5(lightning surge)

IEC/EN61000-2-2 (Immunity to low frequency signals)

INSTALLING YOUR EPS

UNPACKING

Inspect the EPS upon receipt. The box should contain the following:
EPS unit x1; Installation Guide x1; User manual x1; Warranty card x1.

AUTOMATIC VOLTAGE REGULATOR

Utility power is inconsistent. The EPS increases low voltage to computer safe 220 volts. The EPS automatically provides battery backup (External battery connection required) if the voltage drops below 140 volts or exceeds 300 volts.

HARDWARE INSTALLATION GUIDE

1. Your new EPS may be used immediately upon receipt. However, **recharging the external battery for at least 8 hours** is recommended to ensure that the battery's maximum charge capacity is achieved (Charging time varies with capacity and a 100Ah or great battery is recommended). To recharge the external battery, simply leave the unit plugged into an AC outlet. Your EPS is equipped with an auto-charge feature. When the EPS is plugged into an AC outlet, the external battery will automatically recharge. The unit will charge in both the ON and OFF positions.

2. **DO NOT plug a laser printer, paper shredder, copier, space heater, vacuum or other large electrical device into the EPS. The power demand of these devices may overload and damage the unit. DO NOT use with medical or life support equipment. DO NOT use with or near aquariums as condensation may cause the unit to short.**

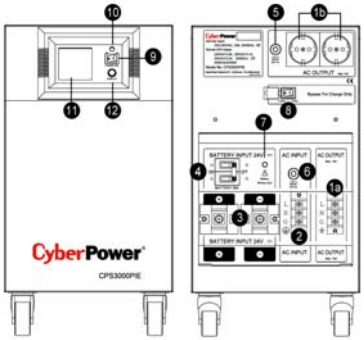
3. After connecting the hard wires, plug the EPS into a 2 pole, 3 wire grounded receptacle (wall outlet). Make sure the wall branch outlet is protected by a fuse or circuit breaker and does not service equipment with large electrical demands (e.g. refrigerator, copier, etc…). The warranty prohibits the use of extension cords, outlet strips, and surge strips.

4. Press the power switch to turn the unit on. The power on indicator light will illuminate and the unit will beep once.

5. If an overload is detected, an audible alarm will sound and the unit will emit one long beep. To correct this, turn the EPS off and unplug at least one piece of equipment from the battery power supplied outlets. Wait 10 seconds. Make sure the circuit breaker is depressed and then turn the EPS on.

6. To maintain optimal battery charge, leave the EPS plugged into an AC outlet at all times. UPS will not function if the Bypass For Charge Only switch is enabled. Enabling the switch provides the bypass for charge only.

BASIC OPERATION



DESCRIPTION

1. AC Outlets
The unit has two Schuko outlets and one terminal for connected equipment which ensures temporary uninterrupted operation of your equipment during a power failure.
Max. output of 1a is 20A;
Max. output of 1b is 15A;
Max. output wattage of (1a+1b) is 2250W
Note：Maximum cord length is 10 meters and the cable O.D. must be 12AWG or greater.

2. AC Inlet
AC input terminals
Note：The O.D. of the distribution cables must be 12AWG or greater.

3.DC Inlet
Battery input terminals
Note：Maximum battery wiring cable length is 2 meters and the cable O.D. must be 2AWG or greater.

4. DC Circuit Breaker
Located on the side of the EPS, the circuit breaker serves to provide overload and fault protection.

5. AC Output Circuit Breaker
Located on the side of the EPS, the circuit breaker serves to provide overload and fault protection. The breaker only works on 1b.

6. AC Input Circuit Breaker
Located on the side of the EPS, the circuit breaker serves to provide overload and fault protection.

7. Battery Input Wiring Fault LED
Battery input wiring fault LED will illuminate to indicate the wiring polarity is reversed.

8. Bypass Switch
Enabling this switch provides the bypass for charge only. UPS will not function if the switch is enabled.

9. Power Switch
Used as the master on/off switch for equipment connected to the battery power supplied outlets.

10. Power On Indicator
This LED is above the power switch. It illuminates when the utility condition is normal and the EPS outlets are providing power, free of surges and spikes.

11. LCD Module Display
High resolution and intelligent LCD display shows all the EPS information with icons and messages. For more information please check the DEFINITIONS FOR ILLUMINATED LCD INDICATORS section.

12. LCD Display Toggle / Selected Switch
Users can monitor EPS status and set up functions using the toggle.

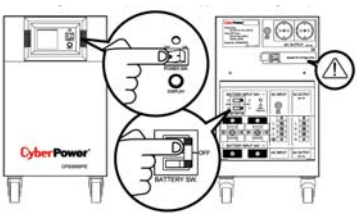
Installation Guide

Note: The installation must be done by professionals.

1. Remove the cover from the back of the machine.

2. Make sure both the POWER SW. and the BATTERY SW. are turned off. (Step1)

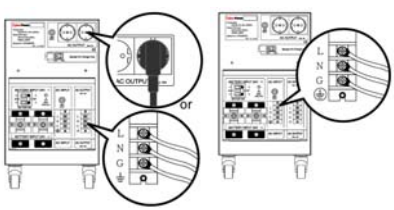
⚠ UPS will not function if the switch is enabled. Enabling this switch provides the bypass for charge only.



Step 1

3. Connect the AC OUTPUT connections (AC plugs or terminal connections). (Step2)

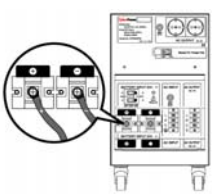
4. Connect the AC power source to AC INPUT (Make sure AC power is off first). (Step3)



Step 2 **Step 3**

5. Connect the batteries to the BATTERY INPUT. (Step4)

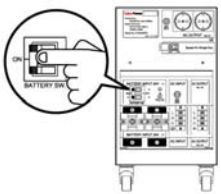
⚠ WIRING FAULT LED will illuminate to indicate the wiring polarity is reversed.

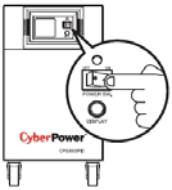


Step 4

6. If the battery box or the battery connection has a switch, please turn it on first.

7. Turn on the BATTERY SW. on the back of the machine (Step 5)





Step 5 **Step 6**

8. Make the AC input connection and turn on the Power Switch on the front panel. The **Power On** Indicator and the **LCD Module Display** will blink 4 times. Press the **Display** toggle **(Selected Switch)** once. The output voltage showing on the **LCD Module Display** should be 220V. This completes the start-up process. (Step 6)

9. Press and hold the Display toggle switch for 4 seconds. The machine will begin a self test and enter Battery Mode for 6 seconds before returning to Line Mode. Correct any issues that may be present before continuing. See the Definitions for illuminated LCD on page 7 for a list of alarm code definitions.

10. After ensuring the machine works normally, reassemble the back cover. The installation is now complete.

11. When the external battery needs to be maintained or replaced remember to turn the machine off. Once off, remove the AC power source and switch off the BATTERY SW. before maintenance or replacing the batteries. When the work is complete, please start from Step 3 to re-install the machine.

REPLACING THE BATTERY

CAUTION! Read and follow the IMPORTANT SAFETY INSTRUCTIONS before servicing the battery. Battery service should only be done by qualified professionals.

CAUTION! Use only the specified type and number of external batteries. Please see the technical specifications for replacement batteries.

CAUTION! The battery may present a risk of electrical shock. Do not dispose of battery in a fire as it may explode. Follow all local ordinances regarding proper disposal of batteries. Most retailers that sell lead-acid batteries collect used batteries for recycling.

CAUTION! Do not open or mutilate the batteries. Released electrolyte is harmful to skin and eyes and may be toxic.

CAUTION! A battery can present a high risk of short circuit current and electrical shock. Take the following precautions before replacing the battery:

1. Remove all watches, rings or other metal objects.
2. Only use tools with insulated handles.
3. Do not lay tools or metal parts on top of battery or any terminals.
4. Wear rubber gloves and boots.
5. Determine if the external battery is inadvertently grounded. If grounded, remove the source of ground. **CONTACT WITH GROUNDED BATTERY CAN RESULT IN ELECTRICAL SHOCK!**

DEFINITIONS FOR ILLUMINATED LCD

The LCD Display indicates a variety of EPS operational conditions. All descriptions apply when the EPS is plugged into an AC outlet and turned on or when the EPS is on battery.

1. INPUT VOLTAGE Meter: This meter measures the AC voltage that the EPS is receiving from the utility wall outlet. The EPS is designed, through the use of automatic voltage regulation, to continuously supply connected equipment with stable, 220 output voltages. In the event of a complete power loss, severe brownout or over-voltage the EPS will rely on its external battery to supply consistent 220 output voltage. The Input Voltage Meter can be used as a diagnostic tool to identify poor quality input power.

2. OUTPUT VOLTAGE Meter: This meter measures, the AC voltage that the EPS is providing to the computer. It displays normal line mode, AVR mode, and battery backup mode.

3. NORMAL MODE Icon: This icon will illuminate when the EPS is working under normal conditions.

4. ON BAT (On Battery) Icon: During a severe brownout or blackout, this icon illuminates and an alarm sounds (2 short beeps followed by a pause) to indicate the EPS is operating from its external batteries. During a prolonged brownout or blackout, the alarm will sound continuously. When the BATTERY CAPACITY Meter shows one 20% capacity segment remaining it indicates the EPS's external batteries are nearly out of power. You should save files and shut down your equipment immediately.

5. AVR (Automatic Voltage Regulator) Icon: This icon will illuminate whenever your EPS is automatically correcting high or low AC line voltage. This is a normal, automatic operation of your EPS, and no action is required on your part.

6. SILENT MODE Icon: This icon illuminates whenever the EPS is in silent mode. The buzzer will not beep during the battery mode until the battery reaches low capacity.

7. OVER LOAD Icon: This icon will illuminate and an alarm will sound to indicate the battery supplied outlets are overloaded. To clear the overload, unplug some of your equipment from the battery supplied outlets until the icon is no longer illuminated and the alarm stops.

8. FAULT MODE Icon: This icon illuminates if there is a problem with the EPS. Please contact CyberPower Systems for further help and support.

9. BATTERY CAPACITY Meter: This meter displays the approximate charge level (in 20% increments) of the EPS's external battery. During a blackout or severe brownout, the EPS will switch to battery power, the ON BAT icon will be illuminated, and the charge level will decrease.

10. LOAD CAPACITY Meter: This meter displays the approximate output load level (in 20% increments) of the EPS's battery outlets.

EPS Status Inquiry and Functions Setup

1. General Mode

a. Press the “Display” button to check the status of the EPS

	Item	Unit
1	Input Voltage	V
2	Output Voltage	V
3	Output Frequency	Hz
4	Load	Kw
5	Load Capacity	%
6	Battery Capacity	%
7	Centigrade	℃
8	Fahrenheit	℉

b. Press and hold the **Display** toggle for 4 seconds,

- If the machine is in the Battery Mode, it enters the status of Mute.
- If the machine is in the Line Mode, it proceeds Self Test.

c. If the **Display** toggle remains untouched for over 30 seconds, the LCD backlight will turn off automatically.

2. Set-up Mode

Step 1 : The machine enters Set-Up Mode after holding the Display toggle for 10 seconds. Icon 4,5,6,7,8,9 lights to indicate Set-Up Mode.

Step 2 : By pressing the Display toggle, users can switch between setup functions. User configurable functions are as follows:

a. Delay Time: The time delay between switching from Battery Mode to Line Mode. There are 9 different settings. The default setting is 2.0 minutes.
Function description: The machine will switch from Battery Mode to Line Mode after the AC power transmission reaches stability within the preset delay time.

b. Battery AH: The function adjusts the battery charging current according to the capacity of the connected batteries. It can be configured for 50, 100, 150 and 200AH The default setting is 200AH.

c. Nominal Output Voltage: Configures the correct electricity/voltage supplied in the area/country where the EPS will be used. 220V, 230V and 240V may be selected. The system default setting is 220V.
Function description: AVR Dynamic Voltage Compensation works automatically based on the system voltage settings.

d. Static Frequency Tolerance: There are 6 settings. The default setting is +/-10%.
Function description: The settings may be adjusted to the quality of the electricity in use.

e. Slew Rate: Also called Dynamic Frequency Tolerance. There are 5 different settings. The default value is 4Hz/sec.
Function description: “Slew Rate” indicates the tolerance of a device in accepting frequency variances. The lower “Slew Rate” results in less tolerance but better protection for the connected loads.

f. Battery Shutdown Voltage: This function adjusts the UPS shutdown point according to the battery voltage.

The settable items are sorted by unit as in the following table：

Items	Unit
Delay Time	Min
Battery AH	A
Nominal Output Voltage	V
Static Frequency Tolerance	%
Slew Rate	Hz
Battery Shutdown Voltage	V

Step 3: Press and hold the toggle for 4 seconds. When the icons blink, the value of each item can be changed by slightly pressing the toggle.

Step 4: To save the value and return to general mode, press and hold the toggle for 4 seconds.

Note: If the machine is left idle for over 30 seconds during setup, it will turn off the backlight and return to general mode automatically.

Note: If user wants to return to general mode without saving changes, there are two methods:

1. **Wait for the backlight to turn off**
2. **Press and hold the "Display" toggle for 10 seconds**

FAULT WARNING DISPLAY AND ALARM

1. Overheat Protection：

- **EPS overheat**：The output of the machine is removed and the LCD display shows the temperature exceeds 70℃ (157℉). FAULT Icon lights as well.

2. Over-voltage Protection：The output of the machine is removed. Over Load and FAULT Icon lights on the LCD display.

3. Battery Missing：A long beep is heard and Battery Icon flashes。

4. The following table shows each corresponding warning message on the LCD display and the alarm action when the machine output is off：

LCD Warning Display	**Alarm**	**Condition**	**Solution**
Fault Icon >70	Rapid Beep	**High Temperature Output-Off** Over 70℃	Check fans function and air vent clearances.
Over Load Icon. Fault Icon	Long Beep	**Over Load Output-Off** - Load exceed the rating of EPS.	Check total load to confirm the rating of EPS.

Battery Icon Flash	Beep Once	**Battery Missing- In Line Mode Battery Missing.**	Turn the EPS off, check battery wiring and presence of battery
Fault Icon	1. Rapid Beep 2. Recurring Beep 3. Long Beep	1. **Low Battery Output-Off -- ** Insufficient battery capacity. 2. **Over Charge or AVR Error--** In Line Mode, battery is overcharged or AVR is faulty. 3. **Short Output-Off --** Output Short Circuit Protection	1. Recharge the battery. 2. Inform service agents. 3. Check the EPS output to see if there is a short circuit.
Can Not Start Up	None	1. **Line Input/Output Error Output-Off --** incorrect Input/Output connection 2. **Cold Start Battery High Voltage Output-Off --** the battery voltage is too high during cold start.	1. Check Input/Output connection. 2. Check the reason for battery over-voltage.

TROUBLESHOOTING

Problem	Possible Cause	Solution
Full-time surge protection outlets stop providing power to equipment. Circuit breaker button is projecting from the side of the unit	Circuit breaker has tripped due to an overload.	Turn the EPS off and unplug at least one piece of equipment. Wait 10 seconds, reset the circuit breaker by depressing the button, and then turn the EPS on.
The EPS will not turn on.	The on/off switch is designed to prevent damage by rapidly turning it off and on.	Turn the EPS off. Wait 10 seconds and then turn the EPS on.
	Mechanical problem.	Contact Cyberpower Systems via phone at +31 (0) 40 2348170 or visit our website at www.cyberpowersystems.com

TECHNICAL SPECIFICATIONS

Model	**CPS3000PIE**
Capacity (VA)	3000VA
Capacity (Watts)	2250W
Operation Technology	AVR (Single Boost & Single Buck)
AC Input	
Input Voltage Range	140Vac – 300Vac
Input Frequency Range	50/60 Hz +/- 3 Hz (auto sensing)
AC Output	
Number of Phase	Single Phase
On Battery Typical Output Voltage	Pure Sine Wave at 220Vac +/- 10%
Nominal Output Voltage Configuration Note	Configurable for 220 : 230 : 240Vac
On Battery Output Frequency	50 / 60 Hz +/- 1%
Overload Protection	On Utility: Circuit Breaker On Battery: Internal Current Limiter
Transfer Time	< 10 ms (Typical)
Output Receptacles	Schuko * 2 + Terminal Block
External Battery	
Voltage x Recommended Rating X Quantity	12V x 100Ah X 2
External Battery Voltage Rating	24V
External Battery Type	Sealed Maintenance Free Lead Acid Battery
External Battery Protection	DC Circuit Breaker
Hot Swappable External Battery	Yes
Extended Runtime	Yes
Status Indication	
Indicators	Power On, LCD Display
Audible Alarms	On Battery, Low Battery, Overload
Environmental	
Operating Temperature	32℉ to 95℉ (0℃ to 35℃)
Operating Relative Humidity	0 to 95% Non-Condensing
Physical	
Dimensions (L*W*H)(mm)	330*260*440
Weight (Kg)	36 Kg
Agency	
Certificated	CE